

What is claimed is:

1. A method for use in delivering messages over a network, the method comprising:

5 (a) receiving a network layer address of a first node at a first router on a first sub-network, the first sub-network being topologically foreign with respect to the network layer address of the first node;

10 (b) sending the network layer address of the first node and the network layer address of the first router toward a first remote node at a second sub-network, the second sub-network being topologically foreign with respect to the network layer address of the first node;

15 (c) receiving at the first router a message tunneled by the first remote node using the sent network layer address of the first router, the message tunneled by the first remote node in response to a message at the first remote node addressed to the first node;

20 (d) de-tunneling the message tunneled toward the first router by the first remote node; and

25 (e) sending the de-tunneled message toward the first node;

whereby (a) - (e) proceed without requiring communication with any node on a sub-network that is a topologically home sub-network with respect to the network layer address of the first node.

25

30 2. The method of claim 1, wherein an initial message sent from the first remote node toward the first node after the first node establishes communication with the first sub-network is not received by any node on a sub-network that is a topologically home sub-network with respect to the network layer address of the first node.

3. The method of claim 1, wherein (a) - (e) proceed without communication with any node on the sub-network that is a topologically home sub-network with respect to the network layer address of the first node.

5

4. The method of claim 1, wherein the network layer address of the first node comprises an Internet Protocol (IP) address.

10

5. The method of claim 1,
further comprising determining a link layer address of the first node; and

15

wherein sending the de-tunneled message to the first node comprises sending the de-tunneled message using the determined link layer address.

20

6. The method of claim 1, wherein the first node comprises a wireless node.

25

7. The method of claim 1, wherein the first router comprises a foreign agent configured to communicate with a home agent on the first node's topologically home sub-network.

30

8. The method of claim 1, further comprising:

(f) sending the network layer address of the first node and the network layer address of the first router toward a second remote node at a third sub-network, the third sub-network being topologically foreign with respect to the network layer address of the first node;

(g) receiving at the first router a message tunneled by the second remote node using the sent network layer address of the

first router, the message being tunneled in response to a message at the second remote node addressed to the first node;

(h) de-tunneling the message tunneled to the first router by the second remote node; and

5 (i) sending the de-tunneled message toward the first node; whereby (f) - (i) proceed without requiring communication with any node on a sub-network that is a topologically home sub-network with respect to the network layer address of the first node.

10

9. A computer program product, disposed on a computer readable medium, for use in delivering messages over a network, the computer program including instructions for causing a processor to:

15 (a) receive a network layer address of a first node at a first router on a first sub-network, the first sub-network being topologically foreign with respect to the network layer address of the first node;

20 (b) send the network layer address of the first node and the network layer address of the first router toward a first remote node at a second sub-network, the second sub-network being topologically foreign with respect to the network layer address of the first node;

25 (c) receive at the first router a message tunneled by the first remote node using the sent network layer address of the first router, the message tunneled by the first remote node in response to a message at the first remote node addressed to the first node;

30 (d) de-tunnel the message tunneled toward the first router by the first remote node; and

(e) send the de-tunneled message toward the first node;

whereby (a) - (e) proceed without requiring communication with any node on a sub-network that is a topologically home sub-network with respect to the network layer address of the first node.

5

10. The computer program of claim 9, wherein an initial message sent from the first remote node toward the first node after the first node establishes communication with the first sub-network is not received by any node on a sub-network that is 10 a topologically home sub-network with respect to the network layer address of the first node.

15
20
25
30

11. The computer program of claim 9, wherein (a) - (e) proceed without communication with any node on the sub-network that is a topologically home sub-network with respect to the network layer address of the first node.

12. The computer program of claim 9, wherein the network layer address of the first node comprises an Internet Protocol (IP) address.

13. The computer program of claim 9,
further comprising instructions for causing the processor
to determine a link layer address of the first node; and
25 wherein the instructions for causing the processor to send
the de-tunneled message to the first node comprise instructions
for causing the processor to send the de-tunneled message using
the determined link layer address.

30 14. The computer program of claim 9, wherein the first
node comprises a wireless node.

15. The computer program of claim 9, wherein the first router comprises a foreign agent configured to communicate with a home agent on the first node's topologically home sub-network.

5 16. The computer program of claim 9, further including instructions for causing the processor to:

(f) send the network layer address of the first node and the network layer address of the first router toward a second remote node at a third sub-network, the third sub-network being 10 topologically foreign with respect to the network layer address of the first node;

(g) receive at the first router a message tunneled by the second remote node using the sent network layer address of the first router, the message being tunneled in response to a message at the second remote node addressed to the first node;

(h) de-tunnel the message tunneled to the first router by the second remote node; and

(i) send the de-tunneled message toward the first node;

15 whereby (f) - (i) proceed without requiring communication 20 with any node on a sub-network that is a topologically home sub-network with respect to the network layer address of the first node.